

Case Study 05 - Group 2

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“Beware the Canadians!”

Load Libraries/Data

```
6 #load libraries
7 library(spData)
8 library(sf)
9 library(tidyverse)
10 library(units)
11 library(ggplot2)
12
13 #load 'world' data
14 data(world)
15
16 #load 'states' data|
17 data(us_states)
18
```

Transform Datasets

```
19 #albers
20 albers="+proj=aea +lat_1=29.5 +lat_2=45.5 +lat_0=37.5 +lon_0=-96 +x_0=0 +y_0=0 +ellps=GRS80 +datum=NAD83 +units=m +no_de
21
22 #transform world data
23 world_canada <- world %>%
24   st_transform(world, crs = st_crs(albers)) %>%
25   filter(name_long == "Canada") %>%
26   st_buffer(dist = 10000)
27
28
29 #transform states data
30 states_ny <- us_states %>%
31   st_transform(us_states, crs = st_crs(albers)) %>%
32   filter(NAME == "New York")
33
```

Create border and plot

```
35 #create border
36 border_ny <- st_intersection(world_canada, states_ny)
37
38 #plot
39 ggplot(states_ny) +
40   geom_sf() +
41   geom_sf(data = border_ny, fill = "red") +
42   theme(legend.position = "none", plot.title = element_text(size = 20)) +
43   labs(
44     title = "New York Land within 10km"
45   )
46
47 #area of border
48 area <- st_area(border_ny) %>%
49   set_units(km^2)
50
51 #print area
52 area
53
```

Area = 3495.19 km²

New York Land within 10km

